

(57) Abstract: A method for manufacturing a trench capacitor comprises the step of etching a shallow isolation trench in a two-step process flow. During the first etching step, an etch chemistry based on chlorine or bromine performs a highly selective etch for silicon (12). During the second step, the etch chemistry is based on SiF_4 and O_2 which rather equally etches polysilicon (12) and the collar isolation (22, 31). On top of the wafer, the deposition of silicon oxide on the hard mask (40) predominates and avoids an erosion of the hard mask (40). On the bottom (52) of the trench (50) the conformal etching of polysilicon (12) and collar isolation (22, 31) predominates. The method provides an economic process flow and is suitable for small feature sizes.